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ABSTRACT

This report is an amplification of previous investigations at Hofstra that attempted to identify useful predictors of success in the MBA program with particular emphasis on the Admission Test for Graduate Study in Business (ATGSB). A group of 26 MBA students who graduated in June 1970 and February 1971 were compared with a group of 17 students who had withdrawn from the program at earlier points. Five predictor variables were established: undergraduate GPA; undergraduate business concentration GPA; total, quantitative, and qualitative scores on the ATGSB; graduation versus withdrawal; and overall graduate GPA. The results of the study show that undergraduate GPA and undergraduate business concentration GPA are the most effective success predictors. The ATGSB, however, proved to be the least effective predictor, and little support can be given to the continued use of this test as one of the admission criteria.
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CENTER FOR THE STUDY OF HIGHER EDUCATION

HOFSTRA UNIVERSITY

A Further Investigation of Predictors of Success in the MBA
Program at Hofstra University

Murray Melnick

Summary

This report is an amplification of previous investigations at Hofstra which attempted to identify useful predictors in the MBA program with particular emphasis on the Admission Test for Graduate Study in Business. A group of 26 MBA students who graduated in June 1970 and February 1971 were compared with a group of 17 students who had withdrawn from the program at earlier points, mostly in 1966 and 1967. Due to the nature of status determination, it was not possible to obtain a sample of later withdrawers, but there is reasonable comparability since many of the graduates had been admitted in the period 1965-1967. Five predictor variables; undergraduate GPA, undergraduate business concentration GPA, Total, Verbal, and Quantitative scores on the Admission Test for Graduate Study in Business, and two criterion variables: Graduation vs. Withdrawal, and Overall Graduate GPA, were used in the analysis. The undergraduate business concentration consisted of any courses taken in accounting, finance, business law, economic principles, management, marketing, and statistics. The overall graduate GPA was determined by assigning ratings of 4=A, 3=B, 2=C, 1=D, 0=F for every course taken in the graduate business program. For graduates, the GPA represented the grade status as of graduation from the program; for withdrawing students, the GPA was the cumulative average as of the last course taken prior to withdrawal.

The GPA in graduate school was closely associated with the probability of graduating; while the GPA of the graduates was over "B" at 3.09, the GPA of withdrawers was below "C" at 1.71. Turning to the admissions criteria, the predictive power of the Admission Test for Graduate Study in Business was found to be negligible. There was no significant difference between mean test scores of graduates and withdrawers and near-zero correlations between test scores and graduate grades. On the other hand, undergraduate GPA as well as undergraduate business concentration GPA were significantly higher for graduates than for withdrawers. Undergraduate GPA correlated .59 with graduate grades, undergraduate business concentration .46 with graduate grades.

An examination of possible cut-off points disclosed that the most efficient admissions standard appeared to include undergraduate GPA and undergraduate business concentration GPA as joint criteria. Using available data, when selection criteria were set so that undergraduate GPA was required to be 2.00 or higher and undergraduate business concentration GPA 2.20 or higher, it was found that 22 out of 26 of the graduates would have been

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admitted to the program compared with only 6 of the 17 withdrawing students who would have been admitted. This difference is statistically significant ($\chi^2=8.94$, $p<.01$). The hypothetical graduation rate associated with projected admissions criteria would be 79% (22 out of 28 students meeting criteria, graduating) which is substantially higher than the existing rate based on sample data (60%; 26 out of 43 graduating).

It was concluded that undergraduate GPA and undergraduate business concentration GPA were the most effective and Admission Test for Graduate Study in Business scores the least effective of the predictors studied. Little support can be given to the continued use of this test as one of the admission criteria.

(Copies of the full report are available from the Center for the Study of Higher Education)

Report #98
January 1972

A Further Investigation of Predictors of Success in the MBA
Program at Hofstra University

Murray Melnick

This report continues the effort of previous investigations (Melnick, 1971a, Melnick & Schubert, 1969, Schubert, 1970) which attempted to identify useful predictors in Hofstra's graduate business program with particular emphasis on the Admission Test for Graduate Study in Business. The predictive efficiency of this test was reviewed by Melnick (1971b). Of the eight studies reviewed, four showed low zero-order correlations between the Admission Test for Graduate Study in Business and graduate grades, one reported no significant relationships, two showed low moderate multiple correlations (.30 to .46) when the test was combined with undergraduate GPA, and one reported curvilinear trends. In view of the apparent weakness of the admissions test and in order to make a further attempt to clarify the strength of the relevant variables, a new subject sample was studied in connection with a modified array of predictors.

Method

Subjects

All students in the Master of Business Administration Program at Hofstra University who graduated in June 1970 or February 1971 were considered for inclusion in the sample. The original sample of graduates (37) was pared down to 26 because of the absence of complete data for some individuals. The graduate group was compared to a second group which consisted of 17 students (only those with complete data from a pool of 52) who had withdrawn from the program at earlier points mostly in 1966 and 1967, none before 1965. Due to the manner in which the school determined status it was not possible to obtain a sample of later withdrawers, but there is reasonable comparability since many of the graduates had been admitted in the period 1965-1967. The study sample was limited to individuals with complete data only since this requirement was thought to encourage a greater degree of homogeneity among subjects. Accepting records in varying stages of completeness might have introduced an uncontrolled source of variation.

The graduate GPA of graduates and withdrawers not selected for the sample because of incomplete data was examined. The GPA of the subset of 12 graduates with incomplete data was 2.99 which is comparable to the GPA of the study sample (3.09). Next, the graduate GPA's of the withdrawers not selected because of incomplete data were examined. Of the 35 non-selected withdrawers, two had no grades other than withdrawals and thus presented no GPA. The remaining 33 had a graduate GPA of 2.34. This GPA is stronger than the GPA of the withdrawer group used in the study which was only 1.71 (although it is

clearly closer to the withdrawers than it is to the graduates' GPA level of 3.09). Since the GPA's of most withdrawers were usually based on only a few courses (as compared to the graduates who had full programs) distinctions among withdrawers may be only due to chance. On the other hand, a real difference in graduate performance might mean that the non-selected withdrawers were truly different in terms of ability and thus care should be taken in generalizing from the present withdrawer sample.

Predictors

Five predictor variables: undergraduate GPA, undergraduate business concentration GPA, and Total, Verbal, and Quantitative scores on the Admission Test for Graduate Study in Business were used in the analysis.

The undergraduate business concentration consisted of any courses taken in accounting, finance, business law, economic principles, management, marketing, and statistics. Among the five predictor variables employed, only undergraduate GPA and Total test scores were carry-overs from previous Hofstra investigations.

Criteria of Success in Graduate Work

Two variables were used as indications of success in the program. One was whether the matriculant graduated or withdrew, the other was overall graduate grade-point average. In earlier work only grades in graduate core courses were considered in the analysis. The overall graduate GPA was determined by assigning ratings of 4=A, 3=B, 2=C, 1=D, 0=F, for every course taken in the program. The GPA thus calculated for graduates represented grade status as of graduation, for withdrawers it was the cumulative average as of the last course taken prior to withdrawal.

Results

The GPA in graduate school was closely associated with the probability of graduating. As can be seen in Table 1, while the GPA of the graduates was over "B" at 3.09, the GPA of withdrawers was below "C" at 1.71, a finding which

Table 1

Comparison between Graduates and Withdrawers from MBA Program
with Respect to Graduate GPA and The Five Predictor Variables;
Undergraduate GPA, Undergraduate Business Concentration GPA,
Admission Test for Graduate Study in Business--
Total, Verbal and Quantitative Scores

Students	Graduate GPA	Undergraduate GPA	Undergraduate Business Con- centration GPA	Admission Test for Graduate Study in Business		
				Tot.	V	Q
Graduates (N=26)	3.09	2.58	2.30	504	30	29
Withdrawers (N=17)	1.71	2.23	2.23	498	30	29
t	6.25	2.99	3.30	0.25	--	--
p <	.001	< .01	< .01	> .05	--	--

is highly significant statistically ($t=6.25$, $p<.001$). The marked grade difference between graduates and withdrawers is further evident in Table 2 where it can be seen that 94% of the withdrawers obtained graduate GPA's of less than 2.50 compared to only 8% of the graduates who finished with such averages. Eighty-two percent of the withdrawers received GPA's under 2.20, more than half below 2.00 while none of the graduates were found in those categories. This suggests that failing to graduate is closely associated with failure to obtain good grades in graduate work. Since the quality of graduate grades is closely related to the probability of graduation, it becomes important to identify those variables which will best predict these grades. In this connection, Table 3 presents a matrix of intercorrelations between graduate GPA and the five predictor variables.

Table 2

Comparison between Graduates and Withdrawers: Frequency
Distribution of Graduate GPA by Graduation Status

Graduate GPA	Graduates		Withdrawers		Cumulative Percentages	
	N	%	N	%	Graduates	Withdrawers
3.40 and over	6	23	1	6	100	100
3.20-3.39	4	15	--	--	77	--
3.00-3.19	7	27	--	--	62	--
2.80-2.99	4	15	--	--	35	--
2.60-2.79	3	12	--	--	20	--
2.40-2.59	1	4	1	6	8	94
2.20-2.39	1	4	1	6	4	88
2.00-2.19	--	--	4	24	0	82
1.80-1.99	--	--	1	6	--	58
Below 1.80	--	--	9	52	--	52
	--	--	--	--		
Total	26	100	17	100		

Table 3

Product Moment Correlations between Graduate GPA
and Five Predictor Variables

	1	2	3	4	5	6
1. Graduate GPA		.59*	.46*	.03	.02	.02
2. Undergraduate GPA			.74*	-.21	.04	.14
3. Undergraduate Business Concentration GPA				.08	-.03	.15
4. ATGSB ^a total score					.81*	.84*
5. ATGSB Verbal						.36**
6. ATGSB Quantitative						

* $p < .01$

** $p > .05$

MULTIPLE CORRELATIONS

A) $r_{14} = .03$ $r_{12} = .59$ $r_{24} = -.21$	$R_{1.24} = .61$	D) $r_{16} = .02$ $r_{12} = .59$ $r_{26} = .14$	$R_{1.26} = .59$
B) $r_{14} = .03$ $r_{13} = .46$ $r_{34} = .08$	$R_{1.34} = .46$	E) $r_{15} = .02$ $r_{13} = .46$ $r_{35} = -.03$	$R_{1.35} = .46$
C) $r_{15} = .02$ $r_{12} = .59$ $r_{25} = .04$	$R_{1.25} = .59$	F) $r_{16} = .02$ $r_{13} = .46$ $r_{36} = .15$	$R_{1.36} = .46$

^aATGSB = Admission Test for Graduate Study in Business

It appears that graduate GPA correlates best with undergraduate GPA ($r=.59$) and undergraduate business concentration GPA ($r=.46$). Supporting earlier indications, graduate GPA correlates close to zero with Admission Test for Graduate Study in Business scores, Total, Verbal and Quantitative. Table 3 also shows six multiple correlations which assess the effect of considering test scores jointly with either undergraduate GPA or undergraduate business concentration GPA. No gain is recorded by using test scores except in the first multiple R where the gain is inconsequential.

What emerges thus far is the observation that the test scores seem almost valueless in predicting success in the business program, while undergraduate GPA and undergraduate business concentration GPA seem to have some power. This view is confirmed by recourse to an analysis of mean differences in the performance and scores of graduates and withdrawers.

In Table 1 it can be seen that graduates had a higher undergraduate average than did the withdrawers (2.58 vs. 2.23) and a higher undergraduate business concentration GPA (2.80 vs. 2.28). Both of these comparisons are significant ($p < .01$). On the other hand, the groups show little difference in their test scores; the verbal and quantitative means are identical and the total means are not significantly different (504 vs. 498); $p > .05$). The utility of undergraduate GPA as a predictor is demonstrated in Table 4, the value of the undergraduate business concentration variable is shown in Table 5. In Table 4 it can be seen that while 66% of the withdrawers were admitted with an undergraduate GPA under 2.40, only 34% of the graduates entered with those credentials and while 35% of the graduates entered with undergraduate GPA's of 2.80 or higher, only 6% of the withdrawers did so.

Table 4

Comparison between Graduates and Withdrawers: Frequency
Distribution of Undergraduate GPA

Undergraduate GPA	Graduates		Withdrawers		Cumulative Percentages	
	N	%	N	%	Graduates	Withdrawers
3.40 and over	2	8	--	--	100	--
3.20-3.39	--	--	--	--	--	--
3.00-3.19	1	4	1	6	92	100
2.80-2.99	6	23	--	--	88	--
2.60-2.79	2	8	1	6	65	94
2.40-2.59	6	23	2	12	57	88
2.20-2.39	3	12	5	29	34	76
2.00-2.19	5	18	3	18	22	47
1.80-1.99	1	4	5	29	4	29
Below 1.80	--	--	--	--	0	0
	---	---	---	---		
Total	26	100	17	100		

A similar pattern prevails in Table 5. Sixty-four percent of the withdrawers were admitted with an undergraduate business concentration GPA of less than 2.40, but only 24% of the graduates entered with those credentials. Forty-nine percent of the graduates entered with business concentration GPA's of 2.80 or over while only 24% of the withdrawers had such a record.

Table 5

Comparison between Graduates and Withdrawers: Frequency Distribution of Undergraduate GPA in Business Concentration

Undergraduate Business Concentration GPA	Graduates		Withdrawers		Cumulative Percentages	
	N	%	N	%	Graduates	Withdrawers
3.40 and over	3	12	--	--	100	--
3.20-3.39	4	15	--	--	88	--
3.00-3.19	6	22	1	6	73	100
2.80-2.99	--	--	3	18	--	94
2.60-2.79	2	8	1	6	51	76
2.40-2.59	5	19	1	6	43	70
2.20-2.39	2	8	2	12	24	64
2.00-2.19	3	12	4	23	16	52
1.80-1.99	--	--	4	23	--	29
Below 1.80	1	4	1	6	4	6
Total	26	100	17	100		

Since it was evident that undergraduate GPA and undergraduate business concentration GPA were the best predictors, an attempt was made to identify the ideal cut-off points on these variables. In Table 6, where these predictor cut-off points are considered, the first two columns refer to undergraduate GPA and undergraduate business concentration GPA, respectively. The third column shows the number of graduates out of a total of 26 which were able to meet the indicated criterion while the fourth column does the same for the 17 withdrawers. The fifth column shows the total number of students able to meet the criterion and the last column the proportion of this total who graduated, i.e., the graduation rate for the particular cut-off points. Starting with an undergraduate GPA of 2.60 it will be noted that

Table 6

Predictor Cut-off Points in Relation to Graduation Ratios

Undergraduate GPA of at least	Undergraduate Business Con- centration GPA of at least	Number of Ss able to meet Predictor Criteria Graduates (N=26)	Withdrawers (N=17)	Total Meeting Criteria (N=43)	Proportion of Total Meeting Criteria who Graduated %
2.60	--	11	2	13	85
2.40	2.60	13	3	16	81
2.40	2.40	16	3	19	84
2.40	2.20	16	3	19	84
2.40	2.00	17	4	21	81
2.40	--	17	4	21	81
2.20	2.60	13	5	18	72
2.20	2.40	18	5	23	78
2.20	2.20	19	6	25	76
2.20	2.00	20	8	28	71
2.20	--	20	9	29	69
2.00	2.60	15	5	20	75
2.00	2.40	20	5	25	80
2.00	2.20	22	6	28	79
2.00	2.00	25	10	35	71
2.00	1.80	25	12	37	68
2.00	--	25	12	37	68
1.80	--	26	17	43	60
--	2.60	15	5	20	75
--	2.40	20	6	26	77
--	2.20	22	8	30	73
--	2.00	25	12	37	68
--	1.80	25	16	41	61

11 of the 26 graduates would have been accepted with such a standard and only 2 of the 17 withdrawers. While this presents a favorable admissions picture in that a considerably greater ratio of graduates would have been accepted, the total proportion of students salvaged is only 13 out of 43, and the 11 graduates accepted would be less than half of the graduate sample.

If our criteria become less stringent, on the other hand, we may descend to a point, such as an undergraduate GPA of 1.80 in the table, where there is no discrimination at all, where all of the graduates and all of the withdrawers would meet the criterion. Somewhere between these levels the optimum criteria lie.

The remaining GPA categories are systematically presented using an interval of 20 GPA points. The highest graduation rate (84%) among the ensuing listings can be expected from students who enter with an undergraduate GPA of 2.40 and an undergraduate business concentration GPA of 2.20, (raising the latter requirement to 2.40 does not change the rate). However these cut-off points only net 16 of the 26 students who actually graduated. A search to select cut-off points with both a large proportion of graduates salvaged and as high as possible a proportion of those meeting criterion who graduated resulted in the selection of the category: undergraduate GPA of at least 2.00, undergraduate business concentration GPA of at least 2.20. This choice would have resulted in the admission of 22 of the 26 graduates and only 6 of the 17 withdrawers, a difference in selection ratio which is statistically significant ($\chi^2 = 3.94$, $p < .01$). Seventy-nine percent of those meeting these criteria would be expected to graduate compared to the actual graduation rate in the sample of only 60%. Adjoining categories are not quite as good. With undergraduate GPA at 2.00 and undergraduate business concentration GPA at 2.40, 80% rather than 79% of total meeting criterion graduate but the number of graduates salvaged slips from 22 to 20. On the other hand, if undergraduate GPA is held at 2.00 and undergraduate business concentration GPA is lowered to 2.00, three more graduates are recovered (25 out of 26) but so are four more withdrawers (10 out of 17) which is not desirable, nor is the proportion graduating which drops from 79% to 71%.

Table 6 ends with a consideration of undergraduate business concentration GPA taken as a sole criterion for admission. It is apparent that the resulting effects are not as satisfactory as the already chosen dual consideration of undergraduate GPA of at least 2.00, undergraduate business concentration GPA of at least 2.20.

In selecting the cut-off criteria it must be pointed out that these are generated on a sample of matriculants. It is not really known whether individuals meeting the stated qualifications but not accepted at Hofstra would in fact have performed as those actually selected did. It is inferred that there would be no appreciable difference in performance.

Conclusion

Based on a sample of 43 matriculants recently enrolled in the Hofstra MBA program, undergraduate GPA and undergraduate business concentration GPA were found to be the most effective and Admission Test for Graduate Study in Business scores the least effective of the variables studied in predicting graduate success. Little support can be given to the continued use of the Admission Test for Graduate Study in Business as one of the admissions criteria.

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